



New Stormwater Management Approaches

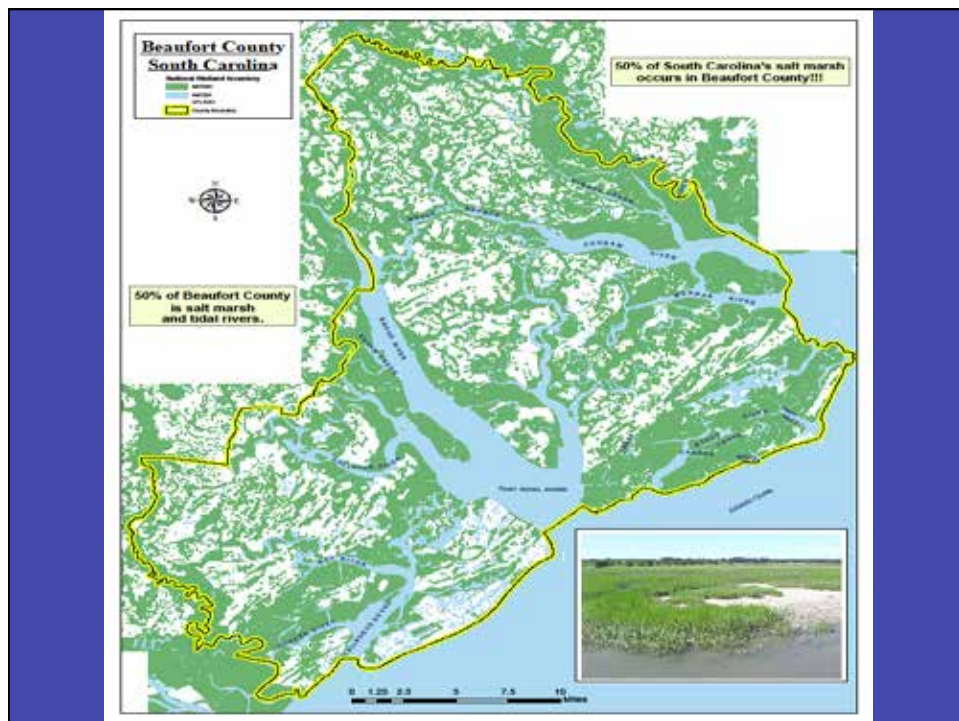
**Dan Ahern, P.E. - Beaufort County
Tidal Creeks Summit
Charleston SC
December 5, 2011**

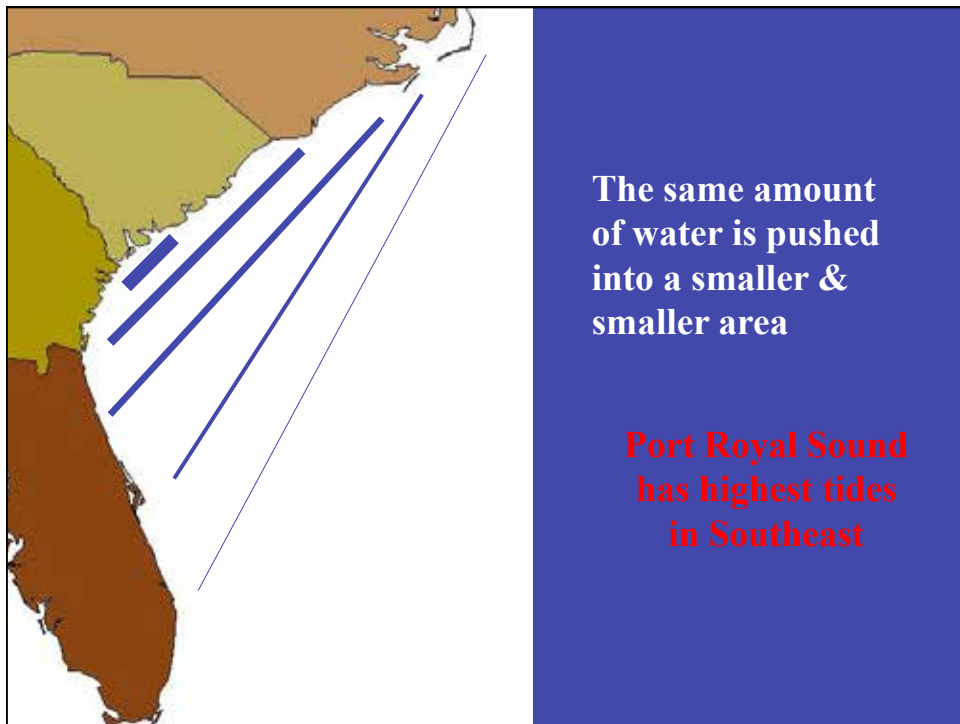
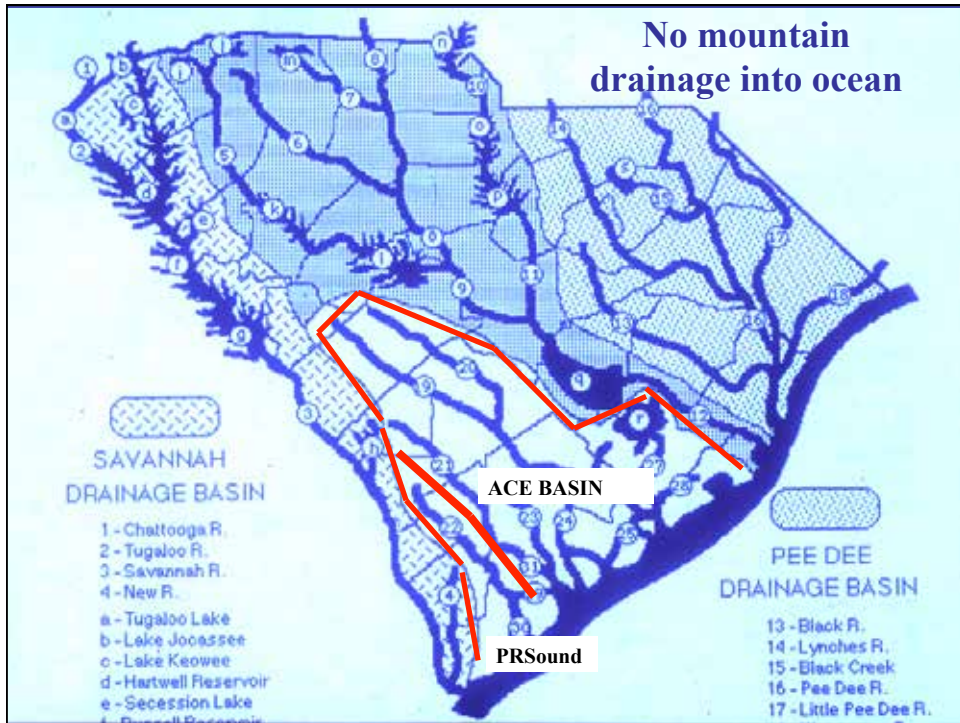
Outline

- **Unique Characteristics that effect SW Management**
- **Short Background on Impacts of Development on Runoff**
- **How Beaufort County got into Runoff Volume Controls**
- **The County's Two Step Management Approach**

Characteristics

- 50% Open and Salt Marshes
- Limited Freshwater Input
- High Tidal Amplitude
- Major Shellfish Harvesting
- Rapid Population Growth





Impacts of Development on Runoff

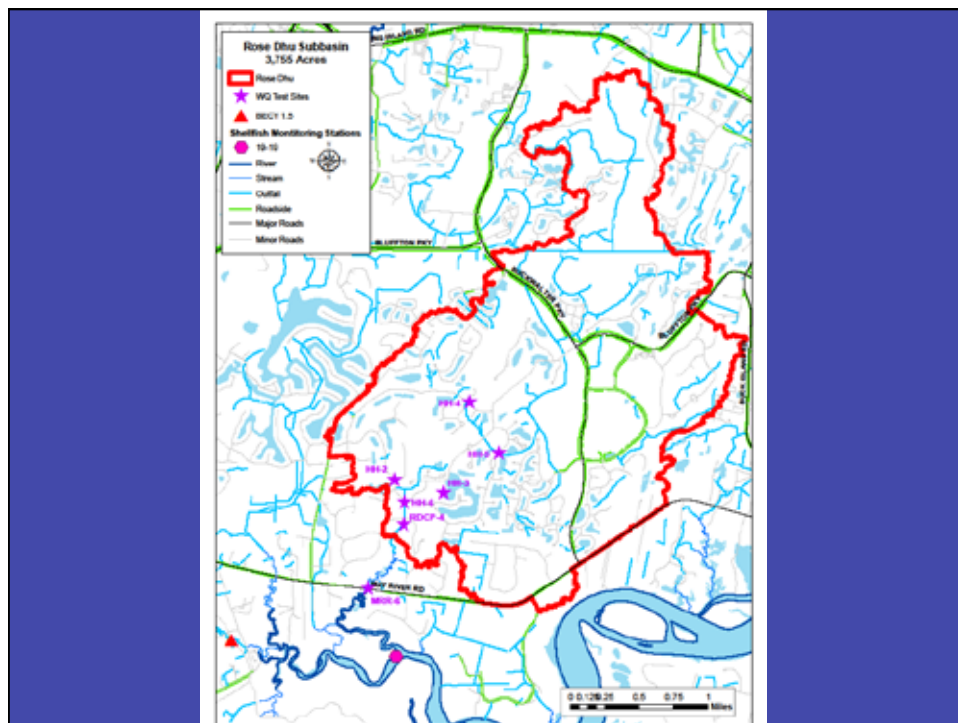
- **New Development adds Impervious Surface**
- **Impervious Surface causes**
 - An increase in rate of runoff
 - Pollutants are carried to receiving waters
 - An increase in total volume of runoff

History of Stormwater Controls

- **1994 – Flooding leads to Peak Controls**
- **1995 – Closing of Broad Creek in HHI leads to Clean Water Task Force**
- **1998 – Adoption of First Water Quality requirements**
- **2003 & 2008 – Additional Water Quality requirements**
- **2009 – May River closure leads to Runoff Volume Controls**

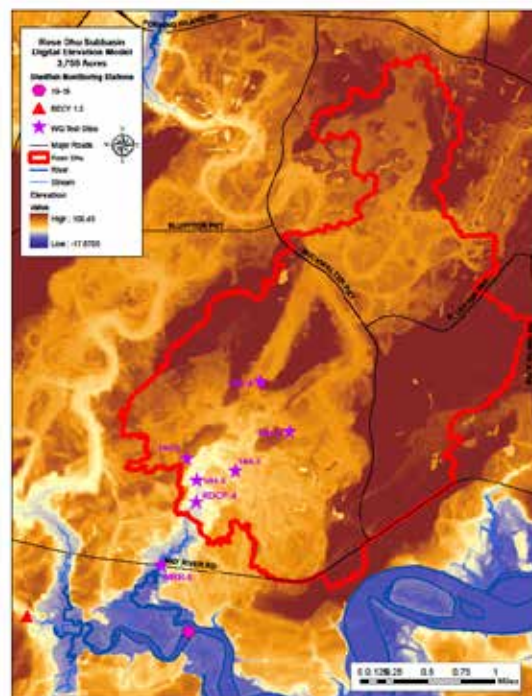
Equivalent Impervious Surface

- Metric that measures how effectively impervious surface runoff is reduced relative to pre-development pervious surface runoff
- 1998 –Adopts Antidegradation Goal on 10% Impervious Surface
- 2003 Adopts 5% goal for Bacteria
- 2009 – Adopts 10% goal as equivalent to 95 percentile rainfall event

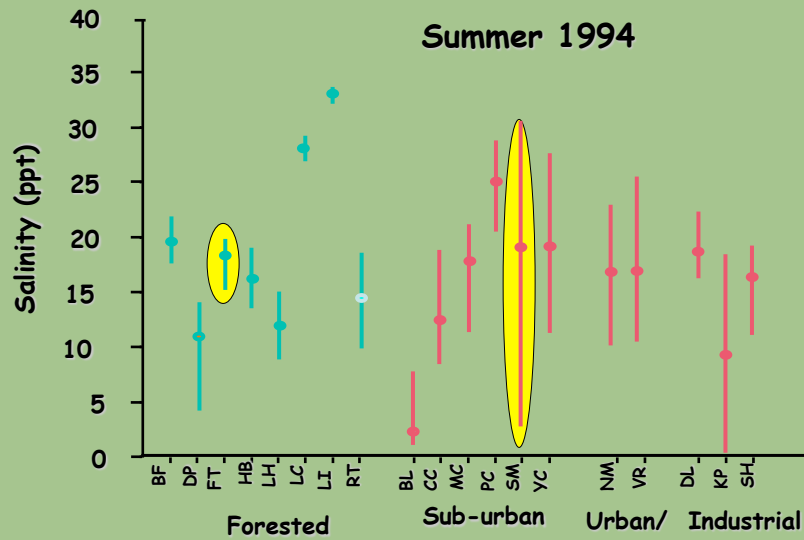


Sampling Station Fecal Data

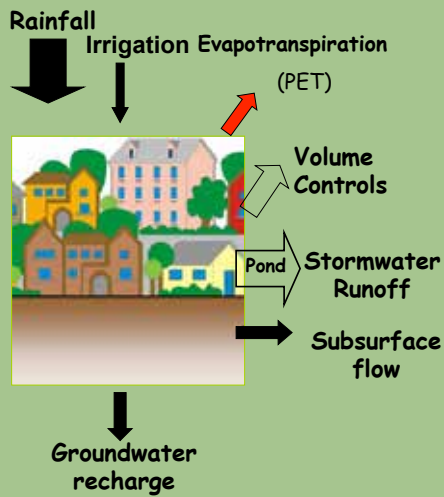
Station /Date	Jan. 6, 2011	Jan. 12, 2011	Jan. 19, 2011	Jan. 26, 2011
HH2	6	11	3	14
HH3	7	5	4	6
HH4	NA	NA	NA	770
HH5	NA	NA	NA	866
HH6	4082	1072	1245	582
MRR6	41	1226	25	1120



Salinity distributions

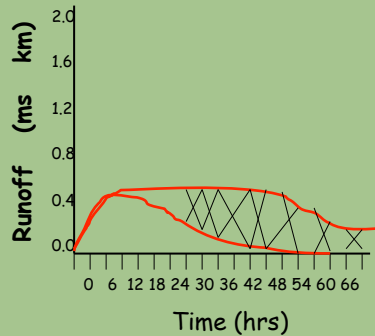


Water Budgets: Developed Watershed With Stormwater Volume Controls



Developed Watershed

Peak same as Forested Watershed
 Volume of Stormwater is Similar to Forested Watershed



Two Steps To Address Stormwater Runoff Volume

- **Step 1**
 - 2009 County adopts Volume Controls
 - 2010 New BMP Manual Revisions
- **Step 2**
 - 2010 Development of On-Site Volume Controls
 - 2011 Adoption and Web Based Program

Why On-Lot Controls?

- **Large Universe not covered by Step 1**
- **Unincorporated Beaufort County vacant lots – Total 22,000**
 - Previously Approved SD/PUDs – 15,000
 - By-Right parcels – 7,000
- **Existing Single Family Structures – 39,000**

Volume Control Requirements

- **Required Volume controls**
 - Control runoff for 95 percentile storm event (1.95 inch)
- **Options**
 - Step 1 (new development)-BMP Manual –
 - Step 2 (on-lot)
 - On-lot Volume worksheet - no technical review
 - BMP manual – review
 - Can be exempted if development meets Step 1 requirements

Resources

- **BMP manual – Now reformatted**
 - Also plan peak credits for volume control
- **On-lot worksheet**
- **Web –based program**
- **All available at County’s web-site**
- **www.bcgov.net/stormwater**
- **Previous articles/presentations**

Tidal Creek Challenges

- Determining hydraulic capacity of coastal wetlands
- Determining significance of Irrigation in tidal watersheds
- Determining sensitive portions of our Tidal Creeks that need more protection
- What goal impervious surface in sensitive portions of Tidal Creeks



Questions

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